

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the revocation and reissuance of the VPDES permit listed below. This permit is being processed as a minor, municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the operation of a municipal wastewater treatment facility at a regional security center. This permit action consists of revoking the permit and reissuing it in lieu of modification, implementing a final ammonia limitation for protection of water quality, removing a final copper limitation, adding nutrients monitoring requirements, and updating the permit to reflect current agency policies and procedures.

In the permit effective January 12, 2012, a four year schedule of compliance for a new copper limitation, as well as a final ammonia limitation, were included. The permittee performed a Water Effect Ratio (WER) study for copper; the results of this study are being incorporated in this permit revocation and reissuance.

SIC Code: 4952 – Sewerage Systems.

1. Facility Name and Address: Central Middlesex STP
170 Oak Landing Road
Saluda, VA 23149
Middlesex County
2. Permit No. VA0073318 Permit Expiration Date: December 31, 2016
3. Owner Contact:
Name: Jamie Heisig-Mitchell
Title: Hampton Roads Sanitation District (HRSD)
Chief of Technical Services Divisions
Telephone No.: 757-460-4220
Address: 143 Air Rail Avenue, Virginia Beach, VA 23455
4. Application Complete Date: July 7, 2015
Permit Drafted By: Laura Galli Date: September 14, 2015
DEQ Regional Office: Piedmont Regional Office

Reviewed By: Brian Wrenn Date: September 21, 2015
Emilee Adamson Date: October 28, 2015

Public Comment Period: December 3, 2015 to January 4, 2016
5. Receiving Stream:
Name: Unnamed Tributary to Urbanna Creek
River Mile: 3-XCM000.80
Basin: Rappahannock River
Subbasin: N/A
Section: 2
Class: III
Special Standards: N/A

1-Day, 10-Year Low Flow: 0 cfs 30-Day, 5-Year Low Flow: 0 cfs
7-Day, 10-Year Low Flow: 0 cfs 30-Day, 10-Year Low Flow: 0 cfs
Harmonic Mean Flow: 0 cfs
Tidal? No On 303(d) list? No

The receiving stream is an ephemeral stream and, therefore, is expected to have zero flow under permitted design conditions. (See **Attachment A-** Flow Frequency Memorandum).

6. Operator License Requirements: The recommended attendance hours by a licensed operator and the minimum daily hours that the treatment works should be manned by operating staff are contained in the Sewage Collection and Treatment Regulations (SCAT) 9 VAC 25-790 et seq. A **Class 4** licensed operator is required for the facility.
7. Reliability Class: Reliability is a measurement of the ability of a component or system to perform its designated function without failure or interruption of service. The reliability classification is based on the water quality and public health consequences of a component or system failure as contained in the SCAT Regulations (9 VAC 25-790 et seq). The permittee is required to maintain **Class I** Reliability for the proposed facility.
8. Permit Characterization:
☐ Private ☐ Federal ☐ State ☒ POTW ☐ PVOTW
☐ Possible Interstate Effect ☐ Interim Limits In Other Documents

9. Table 1: Wastewater Flow and Treatment:

Outfall Number	Wastewater Source	Treatment	Flow
001	Domestic Wastewater from showers, restrooms, kitchen from jail and courthouse complex	Bar screen, comminutor, flow equalization, aeration basin, chemical precipitant, secondary clarification, chemical flocculant, sand filter, ultraviolet disinfection, sludge aerobic digester, and holding chamber.	0.025 MGD design capacity

See **Attachment B** for a facility diagram.

10. Sludge Disposal: Mixed liquor is wasted to a holding tank that is periodically pumped out by the owner and transported to the HRSD West Point STP. Sludge disposal methods for this facility are in accordance with the Sludge Management Plan required by the VPDES regulations.
11. Discharge Location Description: The facility discharges to a dry ditch which drains to an intermittent stream that is an unnamed tributary to Urbanna Creek.
Name of USGS topo map: Saluda (123-D) (See **Attachment B**)
12. Material Storage: Hypochlorite and sodium bisulfate tablets are stored in 5-gallon buckets inside a storage building. Precipitate-Polymer is in liquid form and is stored in 55-gallon drums. The drums are stored inside a storage cabinet. Surplus drums are stored in containment pallets. The pallets are part of an enclosed system that is able to contain a spill if one were to occur preventing the release of contaminated storm water. No other chemicals are stored on site.
13. Ambient Water Quality Information: Due to its ephemeral nature, effluent data was used to characterize low flow conditions of the receiving stream based upon the advice of DEQ Piedmont Regional Office Senior Water Quality Planner, J. V. Palmore (see **Attachment A**).
14. Antidegradation Review and Comments: Tier 1 X Tier 2 Tier 3

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect those uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The tributary is considered a Tier 1 due to its ephemeral nature.

15. Site Inspection: Performed by M. Williams on January 9, 2013. Site visit performed by L. Galli on September 11, 2015. See **Attachment C**.

16. Effluent Screening:

Effluent data including DMR data is included in **Attachment D**.

Conventional Pollutants

The permit limitations for cBOD₅, TKN and DO are based on the Stream Sanitation Memorandum by State Water Control Board staff member D.X. Ren dated April 12, 1995. The 1995 model was based on a design flow of 0.0395 MGD. However, during the processing of the permit that became effective on January 12, 2012, some questions arose regarding the design capacity of the treatment plant. HRSD and DEQ staff believes the correct design capacity of the existing plant to be 0.025 MGD. In order to ensure that the 1995 conventional permit limitations for a 0.0395 MGD plant are protective of water quality at 0.025 MGD design flow, DEQ Senior Planning Staff conducted a modeling effort using the same input variables and assumptions used in the 1995 model. As a result, the analysis indicated that limitations of 12 mg/l for cBOD₅ and 5.0 mg/l for dissolved oxygen were protective of in-stream criteria using the 1995 modeling assumptions. These limitations were less stringent than the historical limitations of 11 mg/L of cBOD₅ and 6.5 mg/L DO.

In order to confirm the design capacity of the plant, HRSD conducted a capacity analysis of the facility by applying the standards of the Sewage Collection and Treatment Regulations, and concluded that the facility has a 0.025 MGD capacity. HRSD requested a permit modification to incorporate the cBOD₅ and DO limitations that were developed using the in-stream sanitation analyses for a 0.025 MGD facility. Upon confirmation that the STP is a 0.025 MGD plant and request for permit modification, DEQ Senior Planning Staff performed a model update analysis using current modeling protocols and assumptions. Based on an updated modeling effort, the permit limitations to be applied for the 0.025 MGD plant are as follows: cBOD₅ = 9.0 mg/L, TKN, 3.0 mg/L and DO = 6.3 mg/L. See **Attachment E**.

pH: A pH limitation of 6.0-9.0 Standard Units is assigned to all Class III waters in accordance with VA Water Quality Standards, 9VAC 25-260-50, and federal secondary treatment standard guidelines.

Total Suspended Solids (TSS): A monthly limitation of 11 mg/L (1000 g/d) and a weekly limitation of 16 mg/L (1600 g/d) for TSS are carried forward to the 2016 permit based on permit writer judgment.

Bacteria: Due to citizen concerns expressed during the public participation process in the 1995 permit modification, the Virginia Department of Health (VDH) recommended by letter dated September 26, 1995 (**Attachment F**) that the fecal coliform limitation be lowered from 200 N/100 mL to 20 N/100 mL. The fecal coliform limitation decision has been carried through the 1997, 2003, 2008 and 2012 reissuances of this permit, and shall carry forth to the 2016 reissuance in addition to an *E. coli* bacteria limitation. The *E. coli* limitation of 126 N/ 100 mL is based on the Virginia Water Quality Standard 9VAC 25-260-170.

Reasonable Potential Analysis: For all other parameters determined to be present in the facility's discharge, a Reasonable Potential Analysis must be conducted in order to determine if it is statistically probable that future discharges may contain that pollutant in concentrations which are harmful to the aquatic life or human health within the receiving stream. The first step of the analysis is determining the maximum concentration that may be discharged by the facility which will maintain the in-stream acute and chronic criteria contained in the *Virginia Water Quality Standards* (9 VAC 25-260 et.seq.). This maximum allowable pollutant concentration, called a wasteload allocation (WLA), is determined using a DEQ-created Excel spreadsheet deemed MSTRANTI, which requires inputs representing critical flow and water quality data for both the effluent and the receiving stream. The second step of the analysis utilizes another computer

application named STATS.exe to calculate the lognormal distribution of the identified pollutant concentration using data submitted by the permittee as a sample set. The average and maximum 97th percentiles of the distribution are calculated and then compared to the WLA's determined earlier. If the 97th percentiles exceed the WLAs, a limitation is deemed to be necessary, which is also calculated by STATS.exe based on EPA-guidelines for the control of toxic pollutants.

Included in **Attachment G** are the effluent limitation development documents including the MSTRANTI data source table, MSTRANTI spreadsheet of WLAs, and STATS.exe analyses to determine reasonable potential.

TKN and Ammonia: Although the effluent is limited to a concentration of 3.0 mg/L for TKN, an ammonia toxicity evaluation must be performed because the TKN limit may not always protect water quality against ammonia toxicity. Effluent data is not necessary to determine that ammonia has a reasonable potential to impact water quality since it is known to be present in the effluent of domestic wastewater. Typically, an expected concentration of 9.00 mg/L for ammonia is used to determine if limitations are necessary to protect water quality, in accordance with procedures established in GM00-2011 and GM10-2003. However, in this case, since an effluent limitation for TKN is applicable, and TKN is the sum of ammonia nitrogen (40-60% of TKN) and organic nitrogen, it is appropriate to use the TKN limitation as the expected concentration.

The evaluation for ammonia indicated that a limitation of 0.56 mg/L is necessary to protect water quality. The 2012 permit included a four-year schedule of compliance for an ammonia limitation of 0.54 mg/L, which would become effective January 12, 2016. Because the current permit is being revoked and reissued before the compliance date, and because the 0.54 mg/L limitation has not yet become effective, a slightly less stringent limitation of 0.56 mg/L for ammonia is included in the 2016 permit. A limitation that has not yet become effective is not subject to antibacksliding regulations; therefore, a less stringent limitation may be applied.

The 2012 permit explained that because a final ammonia limitation of 0.54 mg/L is protective of water quality, the TKN limitation would be unnecessary, and therefore would be removed from the permit upon effective date of the schedule of compliance. However, the 3/13/2012 model required a TKN of 3.0 mg/L to meet the water quality standard for dissolved oxygen instream. DEQ modeling procedure estimates that 3.0 mg/L of TKN is refractory and the nitrogenous biochemical oxygen demand is calculated by taking the TKN limit – 3.0 mg/L (i.e. a TKN limit of 3.0 mg/L equates to a nBOD of 0 mg/L). This calculation is also included in GM00-2011 and is based on the language from the 1987 A. J. Anthony memorandum "Advisory Notification of Effluent Limits for Swamp and Marsh Waters", which states that:

"...TKN – We are recommending that unoxidized nitrogen be removed in the treatment plant. The recommended limit on TKN recognizes that a normal domestic effluent usually contains 2-3 mg/L TKN that is refractory and cannot be removed by biological treatment...The intent of our recommendation is to remove all biologically oxidizable nitrogen compounds from the effluent."

Without a TKN limitation of 3 mg/L, the permit would allow an ammonia concentration of 0.56 mg/L in the discharge, which would equate to 1+ mg/L of oxidizable TKN. This is inconsistent with the results of the model which required 0 mg/L of oxidizable TKN. For this reason, a TKN limitation of 3 mg/L will be retained in the 2016 permit.

Copper: During the 2012 evaluation, a copper limitation of 3.3 µg/L with a four-year schedule of compliance was included in the permit to protect water quality. The permittee performed a Water Effects Ratio (WER) study (see **Attachment H**) to address the copper limitation. A WER study includes the collection of data to calculate a site-specific aquatic life criterion derived for a specific metal. The adjustment procedure based on the toxicological determination of a WER may be used to account for a difference between the toxicity of the metal in laboratory dilution water and its toxicity in the water at the site. The study, which proposed a final WER of 28.68, was reviewed by DEQ Central Office and approved via email on November 5, 2014 (see **Attachment H**). This value was used to adjust the copper criteria and calculate the resulting waste load allocations (WLA) for this permit cycle, as shown in table 1 of **Attachment H**. The new WLAs obtained using the WER

were then entered into the STATS.exe computer application to determine the need for a permit limitation and calculate the limitation. All data submitted with the DMRs from May 2012 through July 2015 were entered; the results show that based on the new acute and chronic WLAs, no limitation is necessary for copper (see **Attachment G**). Therefore, the interim monitoring and final copper limitation of 3.3 ug/L will be removed from the permit with this revocation and reissuance. The removal of this limitation does not constitute a violation of antibacksliding regulations because the limit has not yet become effective.

Table 1 – Basis for Effluent Limitations and Monitoring

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MO AVG	WE AVG	MIN	MAX	FREQ	SAMP TYPE
Flow	NA	NL – monitoring only		NA	NL	1 per Day	Estimate
pH	1, 2	NA	NA	6.0 SU	9.0 SU	1 per Day	Grab
cBOD ₅	3	9 mg/L (850 g/d)	13 mg/L (1200 g/d)	NA	NA	1 per Month	Grab
TSS	4	11 mg/L (1000 g/d)	16 mg/L (1500 g/d)	NA	NA	1 per Month	Grab
Ammonia as N	4	0.56 mg/L	0.56 mg/L	NA	NA	1 per 3 Months	Grab
Total Kjeldahl Nitrogen	3	3.0 mg/L	4.5 mg/L	NA	NA	1 per 3 Months	Grab
Dissolved Oxygen	3	NA	NA	6.3 mg/L	NA	1 per Day	Grab
<i>E. Coli</i>	1	126 N/100 mL (geometric mean)	NA	NA	NA	1 per Week	Grab (between 10am and 4 pm)
Fecal Coliform	4	20 N/100 mL (geometric mean)	NA	NA	NA	1 per Week	Grab (between 10am and 4 pm)
Total Phosphorus	5	NL	NA	NA	NL	1 per Year	Grab
Total Kjeldahl Nitrogen	5	NL	NA	NA	NL	1 per Year	Grab
Nitrite + Nitrate	5	NL	NA	NA	NL	1 per Year	Grab
Total Nitrogen	5	NL	NA	NA	NL	1 per Year	Calculated

1. Water Quality Standards
2. Secondary Treatment Limitations
3. 2012 Model
4. Permit Writer Judgment (PWJ)
5. PWJ - Nonsignificant dischargers are subject to aggregate wasteload allocations for Total Nitrogen (TN), Total Phosphorus (TP) and Sediments under the Total Maximum Daily Load (TMDL) for Chesapeake Bay as per GM14-2011. Monitoring of TN and TP is required in order to verify the aggregate wasteload allocations.

Monitoring Frequency Reductions: a monitoring frequency reduction analysis was performed for cBOD₅, TSS, pH, Ammonia, DO, *E. Coli* and Fecal Coliform. Results of the analysis and rationales are presented in **Attachment I**.

17. **Basis for Sludge Use & Disposal Requirements:** This facility does not land apply sludge; therefore there are no limitations or monitoring applicable to sludge. Sewage sludge is held in a tank and periodically pumped and hauled to the HRSD West Point STP where sludge is handled in accordance with the Sludge Management Plan and DEQ Solid Waste Permit 572. The sewage sludge is ultimately sent to Waste Management Middle Peninsula Regional Landfill for final disposal.
18. **Antibacksliding:** This permit removes the limitation for total recoverable copper included in the 2012 permit. A 4-year schedule of compliance was established for this parameter, and a final limitation is scheduled to become effective in January 2016. Since the WER study has demonstrated that the site-specific aquatic life criterion for copper does not result in a violation of the Water Quality Standards, a limitation is no longer required. Anti-backsliding regulation and policy does not apply to limitations that are not yet effective.

The ammonia limitation of 0.54 mg/L included in the 2012 permit is being replaced with a limitation of 0.56 mg/L. Since the 2012 ammonia limitation has not become yet effective, applying a less stringent limitation for this parameter does not constitute backsliding.

All other limitations are the same or more stringent than limitations in the previous permit.

19. **Special Conditions**

Part I.B.1: 95% Capacity Reopener

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B.4 for all POTW and PVOTW permits.

Part I.B.2: Operations and Maintenance Manual Requirement

Rationale: Required by Code of Virginia §62.1-44.19; Sewage Control and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

Part I.B.3: Licensed Operator Requirement

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq., Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professional Regulations (18 VAC 160-20-10 et seq.), require licensure of operators.

Part I.B.4: Reliability Class

Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.

Part I.B.5: Sludge Use and Disposal

Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

Part I.B.6: Sludge Reopener

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage.

Part I.B.7: Compliance Reporting

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limitation or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

Part I.B.8: Materials Storage and Handling

Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

Part I.B.9: Reopeners

Rationale:

- a. Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

- b. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
- c. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

Part I.B.10: CTC, CTO Requirement

Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790, VPDES Permit Regulation 9 VAC 25-31-190 E.

Part I.B.11: Facility Closure

Rationale: This condition establishes the requirements to submit a closure plan for the treatment works of the treatment facility is being replaced or is expected to close. This is necessary to ensure treatment works are properly closed so that the risk of untreated wastewater discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

Part I.B.12: Indirect Dischargers

Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

Part I.B.13: Effluent Monitoring Frequencies:

Rationale: Permittees are granted a reduction in monitoring frequency based on a history of permit compliance. To remain eligible for the reduction, the permittee should not have violations related to the effluent limits for which reduced frequencies were granted. If permittees fail to maintain the previous level of performance, the baseline monitoring frequencies should be reinstated for those parameters that were previously granted a monitoring frequency reduction.

Part II, Conditions Applicable to All VPDES Permits

The VPDES Permit Regulation at 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. Changes to Current Permit:

2012	2016	Special Condition Changed	Reason for Change	Date
Permit Cover	Permit Cover	Intro Paragraph	Revised to reflect correct address and title of Planning and VPDES Permit Manager	9/2015

Part I.A.1 Table: Numerical Limitations and Monitoring Requirements

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Flow (MGD)	NL	No Change	NA	No Change	NA	No Change	NA	No Change	1 per Day	No Change	Estimate	No Change	No Change
pH (SU)	NA	No Change	NA	No Change	6.0	No Change	9.0	No Change	1 per Day	No Change	Grab	No Change	No Change
cBOD ₅	11 mg/L 1000 g/d	9 mg/L 850 g/d	16 mg/L 1600 g/d	13 mg/L 1200 g/d	NA	No Change	NA	No Change	1 per Month	No Change	Grab	No Change	Limitations revised in accordance with the March 13, 2012 Model (see Attachment E).
TSS	11 mg/L 1000 g/d	No Change	16 mg/L 1600 g/d	16 mg/L 1500 g/d	NA	No Change	NA	No Change	1 per Month	No Change	Grab	No Change	Weekly average limitation in g/d corrected.
TKN	3.0 mg/L 300 g/d	No Change	4.5 mg/L 400 g/d	No Change	NA	No Change	NA	No Change	1 per Month	1 per 3 Months	Grab	No change	TKN limitation is retained in the permit in accordance with 3/13/2012 model and GM00-2011. See Attachment I for monitoring frequency reduction.
Ammonia (as N)	1.7 mg/L	0.56 mg/L	1.7 mg/L	0.56 mg/L	NA	No Change	NA	No Change	1 per Month	1 per 3 Months	Grab	No Change	Ammonia limitations applied in accordance with reasonable potential analysis. The final ammonia limitation included in Part I.A.2 of the 2012 permit has not become yet effective, therefore a less stringent limitation does not constitute backsliding. See Attachment I for Monitoring frequency reduction rationale.

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Dissolved Oxygen	NA	No Change	NA	No Change	6.5 mg/L	6.3 mg/L	NA	No Change	1 per Day	No Change	Grab	No Change	Limitation revised in accordance with the March 13, 2012 Model (see Attachment E).
E. Coli	126 N/100mL	No Change	NA	No Change	NA	No Change	NA	No Change	1 per Week	No Change	Grab	No Change	No Change.
Fecal Coliform	20 N/100mL	No Change	NA	No Change	NA	No Change	NA	No Change	1 per Week	No Change	Grab	No Change	No Change.
Total Recoverable Copper	3.6µg/L	--	3.6µg/L	--	NA	--	NA	--	1 per Month	--	Grab	--	Limitation removed following WER study and revised reasonable potential analysis. Since the limitation has not become effective, its removal does not constitute backsliding.
Total Phosphorus	--	NL	-	NA	--	NA	--	NL	--	1 per Year	--	Grab	Added to satisfy monitoring requirements of GM14-2011.
Nitrite + Nitrate	--	NL	-	NA	--	NA	--	NL	--	1 per Year	--	Grab	
Total Nitrogen	--	NL	-	NA	--	NA	--	NL	--	1 per Year	--	Calculated	

Part I.A.2 Table: Final Numerical Limitations and Monitoring Requirements for Ammonia and Copper: this table and all footnotes have been removed as no parameters have a schedule of compliance. All final limitations are included in table I.A.1 as described above.

Changes to Special Conditions:

Part I.A.1	Part I.A.1	Effluent Limitation and Monitoring Opening Paragraph	Deleted schedule of compliance reference as no longer applicable.	9/2015
Part I.A.1 Footnote (3)	--	Compliance Schedule Reference	Deleted as no longer applicable.	
--	Part I.A.1 Footnote (3)	1 per Year Monitoring Period	Added the monitoring period to clarify monitoring expectations as specified in 9VAC25-151.	
--	Part I.A.1 Footnote (4)	1 per 3 Months Monitoring Period	Added the monitoring period to clarify monitoring expectations as specified in 9VAC25-151.	

--	Part I.A.1 Footnote (5)	Total Nitrogen	Added to define Total Nitrogen.	
--	Part I.A.1 Footnote (6)	Compliance Reporting	Added reference to compliance reporting special condition for quantification levels and reporting instructions.	
Part I.A.5	Part I.A.1.b	85% Removal Efficiency	Change reference of <i>BOD</i> ₅ to <i>cBOD</i> ₅ in accordance with secondary effluent requirements and DEQ internal decision.	
Part I.A.2	--	Effluent Limitation and Monitoring Opening Paragraph	Entire table and footnotes deleted as the facility is no longer subject to a schedule of compliance.	
Part I.A.2.a	--	No Visible Solids		
Part I.A.2.b	--	85% Removal Efficiency		
Part I.B.	--	Schedule of Compliance	Deleted as no longer applicable.	
Part I.C.1	Part I.B.1	95% Capacity Reopener	No change.	
Part I.C.2	Part I.B.2	Operations & Maintenance Manual	Revised in accordance with GM14-2003.	
Part I.C.3	Part I.B.3	Licensed Operator Requirement	Revised in accordance with GM14-2003.	
Part I.C.4	Part I.B.4	Reliability Class	No change.	
Part I.C.5	Part I.B.5	Sludge Use and Disposal	No change.	
Part I.C.6	Part I.B.6	Sludge Reopener	No change	
Part I.C.7	Part I.B.7	Compliance Reporting	Revised in accordance with GM14-2003. Total Recoverable Copper quantification levels removed. Revised to add Total Phosphorus and Total Nitrogen compliance reporting conditions in accordance with GM14-2011.	
Part I.C.8	Part I.B.8	Materials Storage and Handling	Updated in accordance with GM14-2003 Section MN-3.	
Part I.C.9	Part I.B.9	Reopeners	No Change.	
Part I.C.11	Part I.B.10	CTC, CTO Requirement	Revised in accordance with GM14-2003.	
Part I.C.10	Part I.B.11	Facility Closure	Re-titled "Closure Plans" and revised in accordance with GM14-2003.	
Part I.C.10	Part I.B.12	Indirect Dischargers	No change.	
--	Part I.B.13	Effluent Monitoring Frequencies	Added in accordance with GM14-2003. See Attachment I for Monitoring Frequency Reduction Analysis and Rationales	
Part II	Part II	Conditions Applicable to All VPDES Permits	Revised in accordance with GM14-2003.	

21. Variances/Alternate Limits or Conditions: The permittee conducted a water effect ratio (WER) study which was reviewed and approved by DEQ Central Office. The study was conducted to justify a change to the final water-quality based limitation included in the 2012 permit, and to adjust the copper criteria and calculate the resulting waste load allocations for the 2016 permit. The results obtained using the new WLAs show that no limitation is required for this parameter. See **Attachment H**.
22. Regulation of Users: 9VAC25-31-280 B.9: Not applicable because this is a public treatment works that is a subdivision of the Commonwealth of Virginia.
23. Public Notice Information required by 9 VAC 25-31-280 B:

Newspaper: The Southside Sentinel

Dates Published: December 3, 2015 and December 10, 2015

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All pertinent information is on file and may be inspected or copied by contacting Laura Galli at:

Virginia –Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060-6296
Telephone Number: 804-527-5095
Facsimile Number: 804-527-5106
Email: laura.galli@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment.

24. Total Maximum Daily Load: During the draft 2014 305(b)/303(d) Integrated Water Quality Assessment Report, the receiving stream was not assessed for any designated use; therefore, it is considered a Category 3A waterbody. The Urbanna Creek Shellfish Bacterial TMDL was approved by the EPA on 11/15/2005 and the SWCB on 9/27/2006. Although the facility is located within the TMDL study area, it was not addressed in the TMDL because the discharge drains to a prohibited zone where the shellfish use is considered removed.

HRSD Central Middlesex was also addressed in the Chesapeake Bay TMDL, which was approved by the EPA on 12/29/2010. The TMDL allocates loads for total nitrogen, total phosphorus, and total suspended solids to protect the dissolved oxygen and SAV criteria in the Chesapeake Bay and its tidal tributaries. The discharge was included in the aggregated loads for non-significant wastewater dischargers in the Rappahannock River mesohaline estuary (RPPMH). The nutrient allocations are administered through the Watershed Nutrient General Permit; the TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

This facility discharges directly to an unnamed tributary of Urbanna Creek in the Chesapeake Bay watershed. The receiving stream has been addressed in the Chesapeake Bay TMDL, approved by EPA on December 29, 2010. The TMDL addresses dissolved oxygen (DO), chlorophyll a, and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tidal tributaries by establishing non-point source load allocations (LAs) and point-source waste load allocations (WLAs) for Total Nitrogen (TN), Total Phosphorus (TP) and Total Suspended Solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185.

Implementation of the Chesapeake Bay TMDL is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP), approved by EPA on December 29, 2010. The approved WIP recognizes the "General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia" (9VAC25-820) as controlling the nutrient allocations for non-significant Chesapeake Bay dischargers. The approved WIP states that for non-significant Municipal and Industrial facilities, nutrient WLAs are to be consistent with Code of Virginia procedures, which set baseline WLAs to 2005 permitted design capacity nutrient load levels. In accordance with the WIP, TN and TP WLAs for non-significant facilities are considered aggregate allocations and will not be included in individual permits. The WIP also considers TSS WLAs for non-significant facilities to be aggregate allocations, but TSS limits are to be included in individual VPDES permits in conformance with the technology-based requirements of the Clean Water Act. However, the WIP recognizes that so long as the aggregated TSS permitted loads for all dischargers is less than the aggregated TSS load in the WIP, the individual permit will be consistent with the TMDL.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. This facility is classified as a Non-significant Chesapeake Bay discharger because it has a permitted design capacity flow, or equivalent load, of less than 100,000 gallons per day into tidal waters. This facility has not made application for a new or expanded discharge since 2005. It is therefore covered by rule under the 9VAC25-820 regulation. In accordance with the WIP, TN and TP load limits are not included in this individual permit, but are consistent with the TMDL because the current nutrient loads are in conformance with the facility's 2005 permitted design capacity loads. This individual permit includes TSS limits of 11 mg/L that are in conformance with technology-based requirements and, in turn, are consistent with the Chesapeake Bay TMDL.

24. Additional Comments:

a. Previous Board Action: None

b. Staff Comments:

- 9 VAC 25-31-370 allows for permits to be revoked and reissued at the request of any interested person, the permittee, or upon staff initiative. A revocation and reissuance is a bilateral action and both the DEQ and permittee must agree to it. Causes for a revocation (9 VAC 25-31-390) include when a modification to a permit occurs within 15 months of a permit expiration date. The need for a revocation and reissuance is case by case.

The previous VPDES permit (signed January 12, 2012) was issued to Hampton Roads Sanitation District (HRSD) and contained a 4 year schedule of compliance for the following parameters: copper and ammonia. On February 16, 2012, HRSD submitted a permit modification request for revised limitations for cBOD5 and DO based on a confirmed design flow of 0.025 MGD, and for the removal of the ammonia weekly limitations. Soon after the modification request, HRSD communicated its intentions to perform a WER study for copper, and therefore the original modification was placed on hold to incorporate the results of the WER study. The WER study was approved by DEQ Central Office in a letter dated November 6, 2014. Rather than modifying the January 12, 2012 permit to include the WER study results for copper, the DEQ Piedmont Regional Office staff is initiating a revoke and reissuance in lieu of permit modification. Without the revocation and reissuance, the final limitations for ammonia and copper would become effective as of January 12, 2016, and another permit modification

would be required to remove the copper limitation based on the WER study results. Three permit actions (2 modifications and a reissuance) would have occurred within a 15 month period. The agency believed that a revocation and reissuance in lieu of modification was appropriate in order to efficiently utilize agency resources and staff time. DEQ staff provided a response to the February 16, 2012 permit modification request in a letter dated June 3, 2015. The letter also explained the revocation and reissuance option, and the permittee agreed that the permit action was appropriate and submitted an application for reissuance in lieu of modification. A signed authorization form for revocation and reissuance in lieu of modification was received from the permittee on June 4, 2015. See **Attachment J** for the 2012 Permit modification request, the 2015 Response to Permit Modification request letter, and the Revocation and Reissuance Agreement.

- The original sewage treatment plant design flow of 0.0099 MGD was proposed in the late 1980s. The State Water Control Board (SWCB) staff established VPDES permit limitations for the plant in a January 1987 modeling exercise (DO = 6.0 mg/L; BOD₅ = 10 mg/L). In 1995, the owners of the plant submitted an application to expand the facility from approximately 0.0099 to 0.0395 MGD. The new design flow was intended to be met by constructing a 0.0295 MGD plant and, when conditions warranted the need to handle more flow, adding the original 0.0099 MGD plant. Modeling was performed based on a design flow of 0.0395 MGD to establish new permit limitations (cBOD₅ = 11.0 mg/L; TKN 3.0 mg/L; DO = 6.5 mg/L).

Documentation of a CTO for the expansion could not be located to confirm the design flow of the plant installed in the late 1990s. The permittee provided plant drawings which document that the design flow of the plant is 0.025 MGD. Additionally, after constructing the new plant, the owner abandoned the second phase plans to add the existing 0.0099 MGD plant and it was eventually closed. During the processing of the permit that became effective on January 12, 2012, some questions arose regarding the design capacity of the treatment plant. In order to ensure that the 1995 conventional permit limitations for a 0.0395 MGD plant are protective of water quality at 0.025 MGD design flow, DEQ Senior Planning Staff conducted a modeling effort using the same input variables and assumptions used in the 1995 model. As a result, the analysis indicated that limitations of 12 mg/l for cBOD₅ and 5.0 mg/l for dissolved oxygen were protective of in-stream criteria using the 1995 modeling assumptions. These limitations are less stringent than the historical limitations of 11 mg/L of cBOD₅ and 6.5 mg/L DO. HRSD then conducted a capacity analysis of the facility by applying the standards of the Sewage Collection and Treatment Regulations and concluded that the facility has a 0.025 MGD capacity. Upon confirmation that the STP is a 0.025 MGD plant and request for permit modification, DEQ Senior Planning Staff performed a model update analysis using current modeling protocols and assumptions. Based on an updated modeling effort, the permit limitations included in the 2016 permit for the 0.025 MGD plant are as follows: cBOD₅ = 9.0 mg/L and DO = 6.3 mg/L.

- The facility submitted notifications for exceedance of 95% of the design capacity in March 10, 2014 for the months of December 2013 through February 2014, and in September 11, 2014 for the months of June through August 2014 (See **Attachment K**). The notifications stated that in both instances the plant was in compliance with all VPDES requirements. In addition, the September 11, 2014 notification documents that HRSD's Commission approved a professional service agreement for the Urbanna (VPDES No. VA0026263) and Central Middlesex Treatment Plans Replacement and Expansion and Central Middlesex Collection System Expansion. The project will replace the existing Urbanna and Central Middlesex STPs with one regional facility. Flow projections will be developed in conjunction with county planning to allow for future expansions of the new treatment plant.
- Financial assurance does not apply to this facility because it is a publicly owned treatment works.
- The last applicable permit maintenance fees have been paid as of September 9, 2015.
- This project is not considered to be controversial. Staff believes that the attached effluent limitations will maintain the Water Quality Standards adopted by the Board.

- The facility is not enrolled in the eDMR program.
 - This facility is not a participant in the Virginia Environmental Excellence Program (VEEP).
 - Registration for coverage under the VAR05 ISWGP is applicable to treatment works treating domestic sewage (TWTDS) facilities with a design flow of 1.0 MGD or more. Because this facility is permitted to discharge less than 1.0 MGD in accordance with its design flow, the VAR05 ISWGP is not applicable at this time.
 - The facility is not considered a significant discharger of nutrients to the Chesapeake Bay watershed. The design flow of the treatment plant is 0.025 MGD. A sewage treatment works plant discharging to the Chesapeake Bay and located downstream of the fall line is classified as significant discharger when the design capacity is equal to or greater than 0.1 MGD. The Central Middlesex STP is not part of the aggregated wasteload allocation for nutrients for this owner as provided in the general permit. Annual monitoring for one permit cycle for nutrients has been added to the 2016 permit in accordance with monitoring requirements of GM14-2011.
 - Local Government officials were notified of the public comment period on December 2, 2015. In accordance with the Code of Virginia, §62.1-44.15:01, the following individuals received notification: Chairman of the Middlesex County Board of Supervisors, Middlesex County Administrator, and the Middle Peninsula Planning District Commission.
- c. VDH Comments:** The application was sent to VDH Office of Drinking Water on 7/7/15. Correspondence received from VDH on July 13, 2015 indicates that there are no public water supply intakes within 15 miles downstream of the discharge (see **Attachment L**). The application was also sent to the Division of Shellfish Sanitation on September 3, 2015; a response was received on September 21, 2015 (see **Attachment L**).
- d. Owner Comments:** The owner provided comments on November 18, 2015. See **Attachment M**.
- e. Public Comments:** No comments were received.
- f. Other Agency Comments:** No comments were received from other state or federal agencies.
- g. Planning Conformance Statement:** On November 5, 2015 senior planning staff confirmed that this permit is in conformance with the existing planning documents for the area.
25. Summary of attachments to this Fact Sheet:
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| Attachment A | Flow Frequency Memorandum |
| Attachment B | Site Maps and Facility Diagram |
| Attachment C | Site Visit and Site Inspection Reports |
| Attachment D | DMR and Application Effluent Data |
| Attachment E | 2012 Stream Sanitation Analysis |
| Attachment F | VDH 1995 Comment on Fecal Coliform Limitation |
| Attachment G | MSTRANTI source table and spreadsheet; STATS Outputs; WER Study Analysis |
| Attachment H | WER Study and DEQ Review and Approval |
| Attachment I | Monitoring Frequency Reduction Analysis |
| Attachment J | Permit Revocation and Reissuance in Lieu of Modification Correspondence |
| Attachment K | Exceedance of 95% Design Capacity Correspondence |
| Attachment L | VDH and DSS Coordination Response |
| Attachment M | Owner Comments and DEQ Response to Comments |